2006

SDSU Cow/Calf Teaching and Research Unit

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Summary

The SDSU Cow Calf Teaching & Research Unit (CCU) provides cattle and facilities for numerous Animal Science and Range Science classes and a variety of research projects. The CCU also provides cattle for the SDSU Little International, Block & Bridle activities, numerous judging team workouts, and other activities that bring potential students to the SDSU campus. Kevin VanderWal and Anna Drew, along with part time student employees, manage the herd and assist with beef cattle activities throughout the year.

Faculty members that have conducted or contributed to research in recent years include: Dick Pruitt, George Perry, Sandy Smart, Jeff Clapper, Bill Epperson, and Vance Owens. Recent studies have included: fenceline weaning, control of estrus and ovulation, supplementation of cows during the breeding season, extending the grazing season with small grain pasture and interseeding legumes in grass pastures.

About 150 Angus and SimAngus females are bred each spring, and 110 calve starting in late February. Although it is not feasible to maintain all the breeds that are important to this region, two breeds provide variation for teaching purposes and still allow us to use the herd for research where limiting variation is important.

The goal of our breeding program is to produce bulls that fit into one of the following categories:

1. Calving ease Angus bulls to breed to heifers and cows.
2. High growth Angus bulls (purebred and high percentage) to breed to cows.
3. SimAngus hybrid bulls for a simple crossbreeding system.

Proven sires are used by artificial insemination. The average expected progeny differences for the herd and AI sires used in 2006 are shown in Tables 1 and 2. The EPDs reflect selection for a balance of above average weaning weight, yearling weight, scrotal circumference, and milk EPDs along with below average birth weight. More recently we have placed emphasis on increasing marbling and rib eye area as long as other important production traits are not sacrificed.

In recent years, breed associations in the US have developed economic indexes to simplify selection. EPDs are weighted by their economic value to rank animals on the net profit per head of their progeny compared to the progeny of other animals raised in the same environment. To use the indexes effectively a person would need to know: 1) What traits are included in the index? 2) What production and marketing scenario is the basis of the index?

Table 1. Angus EPDs and indexes for Angus at the CCU (Spring 2006)

	Angus cows	Yearling Angus heifers	Angus AI sires
Expected Progeny Differences			
Birth weight	+1.5	+1.4	+1.5
Weaning weight	+41	+42	+51
Yearling weight	+78	+81	+95
Scrotal circumference	+0.49	+0.63	+0.61
Milk	+23	+23	+27
Intramuscular fat	+0.14	+0.12	+0.27
Rib eye area	+0.18	+0.28	+0.51
Economic indexes			
$Wean Value	+25.49	+25.18	+28.86
$Beef Value	+31.71	+34.59	+45.76

[1] Professor

Table 2. American Simmental Assn. multi-breed EPDs and economic indexes for SimAngus at the CCU (Spring 2006).

	SimAngus cows	Yearling SimAngus heifers	Simmental and SimAngus AI sires
Expected Progeny Differences			
Birth weight	-2.3	-2.8	+1.3
Weaning weight	+21	+20	+37
Yearling weight	+52	+52	+65
Milk	+7	+9	+4
Yield Grade	+0.19	+0.21	-0.01
Marbling	+0.31	+0.29	+0.11
Rib eye area	-0.21	-0.20	+0.27
Economic Indexes			
All Purpose Index	+100	+93	+96
Terminal Index	+62	+67	+64

Average $Wean and $Beef indexes for Angus produced at the CCU are reported in Tables 1 and 4. The American Angus Association uses cost and price data from the previous 3 years to calculate these indexes. The $Wean index includes both income and cost associated with differences in birth weight, weaning weight, milk production, and mature cow size. It does not include a measure of reproduction. In calculating the index it is assumed that replacement heifers are retained and remaining replacement heifers and steer calves are sold at weaning time. The $Beef index includes income and cost associated with feedlot performance and carcass value for animals sold on a value based grid. This index indicates the value of an animal's progeny to the cattle feeder compared to the progeny of other animals.

The average All Purpose Index (API) and Terminal Index (TI) for the SimAngus at the CCU are listed in tables 2 and 5. The American Simmental Association calculates these indexes using income and cost data averaged over the previous five years to weight EPDs according to their economic importance. These indexes are designed to rank animals for differences in net dollars returned per cow exposed.

Calculation of the API includes all EPDs except tenderness. It is based on the assumptions that sires are bred to first calf heifers and mature cows; a portion of their daughters are retained for breeding; steers and remaining heifers are fed for harvest; and carcasses are priced on a value based grid. The API does include a measure of reproduction through use of a stayability EPD. The TI is designed to compare the value of sires that are bred to mature cows with all offspring fed for harvest and with carcasses priced on a value-based grid. Maternal traits are not included in this index.

Each fall about 20 bred females are sold by phone auction. Yearling bulls are sold in a limited auction held in April at the Cow Calf Unit. The major goal of the sale is to provide a learning opportunity for students interested in the beef industry. Students are involved in producing the sale catalog, developing advertising, creating a promotional video, and answering questions from potential customers. Practice in communication, teamwork, and listening to customers is an important part of the process. Selection of sires each year is based heavily on what we learn from our customers on sale day and what has the most value to them.

On April 15, 2006 students from the CCU crew, the Seedstock Merchandising Class and the Block & Bridle Club hosted potential customers. Table 3 shows the sale averages and range in prices. Eighty two percent of the bulls sold to repeat customers. There is more information and pictures from our 2006 sale on the web at: ars.sdstate.edu/facilities/ccu.

Table 3. Performance and sale price of bulls offered in the 2006 SDSU Bull Sale

	Calving ease Angus bulls	Growth Angus bulls	SimAngus bulls
Birth weight, lb[a]	81	92	94
Adj. weaning weight, lb	710	746	699
Adj. yearling weight, lb	1261	1358	1228
Adj. scrotal circumference, cm	38.2	38.2	38.2
Adj. rib fat, in.	0.31	0.34	0.29
Adj. % IMF	4.16	3.95	3.56
Adj. REA, sq. in.	13.8	13.9	13.7
Average sale price	$2,688	$2,833	$2,257
Range in sale price	$2,000-$4000	$2,000-$4,300	$2,000-$2,900

[a] Birth weights for Angus are actual. Birth weights for SimAngus are adjusted to a mature cow basis as calculated by the ASA.

Table 4. Angus EPDs and indexes for Angus bulls in the 2006 SDSU Bull Sale.

	SDSU Calving ease Angus bulls	SDSU Growth Angus bulls	Breed average for non-parent bulls in the AAA database
Expected Progeny Differences			
Birth weight	+1.3	+3.0	+2.3
Weaning weight	+44	+48	+39
Yearling weight	+84	+90	+72
Scrotal circumference	+.35	+.42	+.33
Milk	+27	+25	+19
Intramuscular fat	+.19	+.19	+..11
Rib eye area	+.31	+.29	+.19
Economic indexes			
$Wean Value	+26.55	+24.23	+22.50
$Beef Value	+38.99	+38.95	+29.99

Table 5. American Simmental Association Multi-Breed EPD and indexes for SimAngus bulls in the 2006 SDSU Bull Sale.

	SDSU SimAngus bulls	Average for Simmental hybrids in ASA database	Factors to convert ASA EPDs to an Angus base
Expected Progeny Differences			
Birth weight	-1.9	-.5	+5.8
Weaning weight	+24	+26	+22.6
Yearling weight	+57	+54	+20.8
Milk	+9	+5	+11.9
Yield Grade	+.21	+.11	
Marbling	+.29	+.23	
Rib eye area	-.24	-.16	
Economic Indexes			
All Purpose Index	+95	+89	
Terminal Index	+62	+60	